

optimum discharge size, the fan volume would vary from 0 cubic feet/minute (cfm) at 0 mph to approximately 95,000 cfm at 60 mph. If this fan is also the only source of cell air circulation or if fan operational mechanics make the 0 mph air flow requirement impractical, air flow of 2 mph or less will be allowed at 0 mph vehicle speed.

(3) The fan air flow velocity vector perpendicular to the axial flow velocity vector shall be less than 10 percent of the mean velocity measured at fan speeds corresponding to vehicle speeds of 20 and 40 mph.

(4)(i) Fan axial air flow velocity is measured two feet from nozzle outlet at each point of a one foot grid over the entire discharge area.

(ii) The uniformity of axial flow tolerance is 20 percent of the fan speeds corresponding to vehicle speeds of 20 and 40 mph.

(5) The instrument used to verify the air velocity must have an accuracy of 2 percent of the measured air flow speed.

(6) The fan discharge nozzle must be located 2 to 3 feet from the vehicle and 0 to 6 inches above the test cell floor during air conditioning testing. This applies to non-wind tunnel environmental test cells only.

(7) The design specifications discussed in paragraphs (e)(1) through (e)(5) of this section must be verified by the manufacturer prior to conducting certification air conditioning tests.

[61 FR 54897, Oct. 22, 1996, as amended at 70 FR 40434, July 13, 2005]

§ 86.162-03 Approval of alternative air conditioning test simulations.

(a) Upon petition from a manufacturer or upon the Agency's own initiative, the Administrator will approve a simulation of the environmental cell for air conditioning test (SC03) described in § 86.160-00 providing that the procedure can be run by the Administrator for SEA and in-use enforcement testing and providing that the following criteria are met:

(1) In deciding whether approvals will be granted, the Administrator will consider data showing how well the simulation matches environmental cell test data for the range of vehicles to be

covered by the simulation including items such as the tailpipe emissions, air conditioning compressor load, and fuel economy.

(2) For any simulation approved under paragraph (a) of this section, the manufacturer must agree to be subject to an ongoing yearly correlation spot check as described in § 86.163-00.

(3) Once a simulation is approved and used by a manufacturer for testing for a given vehicle, EPA agrees to use the simulation test procedure for all official testing conducted on that vehicle by the Agency for certification, SEA, and recall purposes, excluding spot check testing and vehicles which fail the spot check criteria as described in § 86.163-00.

(4) EPA will monitor the aggregate results of spot check testing and full environmental test cells. If EPA determines, based on such aggregate results, that any simulation is producing test results consistently below those from a full environmental test cell, EPA may review its approval of the simulation.

(b) [Reserved]

[61 FR 54899, Oct. 22, 1996]

§ 86.163-00 Spot check correlation procedures for vehicles tested using a simulation of the environmental test cell for air conditioning emission testing.

This section is applicable for vehicles which are tested using a simulation of the environmental test cell approved under the provisions of § 86.162-00(a).

(a) The Administrator may select up to five emission data vehicles (one emission data vehicle for small volume manufacturers), including vehicles submitted for running change approval, each model year for any manufacturer undergoing the spot checking procedures of this section.

(b) Testing conducted under this section (including testing performed in an environmental test cell) will be considered as official data as described in § 86.091-29 and used in determining compliance with the standards. Such testing must comply with all applicable emission standards of subpart A of this part. Retests for the purpose of emission compliance will be allowed using the procedures described in § 86.091-29.

(c) *Spot check procedures.* (1) Subject to the limitations of paragraphs (a) and (d)(2)(iii) of this section, the Administrator may require that one or more of the test vehicles which use a simulation rather than actual testing in an environmental test cell for air conditioning emission testing be submitted at a place the Administrator will designate for air conditioning emission testing in an environmental test cell as described in § 86.160-00. The Administrator may order this testing to be conducted at a manufacturer facility. All manufacturers which use a simulation instead of environmental cell testing must have access to an environment test cell meeting the requirements of § 86.161-00 to perform this testing.

(2) An air conditioning emission test will be performed as described in § 86.162-00 in a full environmental test cell.

(i) The results of the original simulation test and the full environmental test cell required in paragraph (c)(1) of this section are compared. In order to pass the spot check, the test results must pass both the following two criteria:

(A) The NO_x emission results of the simulation test must be at least 85% of the NO_x emission results of the environmental chamber test.

(B) The fuel consumption of the simulation test must be at least 95% of the fuel consumption of the environmental chamber test.

(ii) If either of two criteria of paragraph (c)(2)(i) of this section were not met, a retest is allowed. The manufacturer may elect to conduct either a retest of the simulation procedure or the environmental chamber testing. In order to pass the spot check, the test results must pass both the following two criteria using the retest test result.

(A) The NO_x emission results of the simulation test must be at least 85% of the NO_x emission results of the environmental chamber test.

(B) The fuel consumption of the simulation test must be at least 95% of the fuel consumption of the environmental chamber test.

(iii) If either of the two criteria of paragraph (c)(2)(ii) of this section were not met, a second retest is allowed.

The procedure not selected for the first retest must be used for the second retest, yielding two test results for each procedure. In order to pass the spot check, the test results must pass both the following two criteria using the average test result for each procedure:

(A) The NO_x emission results of the simulation test must be at least 85% of the NO_x emission results of the environmental chamber test.

(B) The fuel consumption of the simulation test must be at least 95% of the fuel consumption of the environmental chamber test.

(iv) If the spot check criteria have not passed after any of the initial test, the first retest, or the second retest the spot check is considered failed.

(d) *Consequences of failing a spot check.* (1) If the emission results of the testing using the environmental test chamber passes all the applicable standards, those test results may be used to obtain a certificate of conformity.

(2) The Administrator will allow up to 60 days for the manufacturer to supply additional data addressing the correlation of the simulation with a full environmental test cell.

(i) If that data prove to the satisfaction of the Administrator that the simulation produces results that correlate sufficiently with the environmental test chamber, the Administrator may allow the continued use of the simulation.

(ii) Otherwise, the Administrator will determine that the simulation fails to meet adequate correlation levels with full environmental testing. As a consequence of this finding, all future air conditioning emission testing on the population of vehicles represented by the failing-spot-check test vehicle (which may include past model year configurations) will be conducted using an environment chamber or a different (or corrected) approved simulation procedure.

(iii) For each vehicle that fails a spot check, the Administrator may select up to two additional vehicles to test for the spot check that do not count against the five vehicle limit of paragraph (a) of this section.

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(e) EPA will monitor the aggregate results of spot check testing and full environmental test cells. If EPA determines, based on such aggregate results, that any simulation (other than the AC1 and AC2 procedures described in paragraphs (b) and (c) of this section for the 2000, 2001, and 2002 model years) is producing test results consistently below those from a full environmental test cell, EPA may review its approval of the simulation.

[61 FR 54899, Oct. 22, 1996]

§ 86.164-00 Supplemental Federal Test Procedure calculations.

(a) The provisions of § 86.144-94 (b) and (c) are applicable to this section except that the NO_x humidity correction factor of § 86.144-94(c)(7)(iv) must be modified when adjusting SC03 environmental test cell NO_x results to 100 grains of water (see paragraph (d) of this section). These provisions provide the procedures for calculating mass emission results of each regulated exhaust pollutant for the test schedules of FTP, US06, and SC03.

(b) The provisions of § 86.144-94(a) are applicable to this section. These provisions provide the procedures for determining the weighted mass emissions for the FTP test schedule (Y_{wm}).

(c)(1) When the test vehicle is equipped with air conditioning, the final reported test results for the SFTP composite (NMHC+NO_x) and optional composite CO standards shall be computed by the following formulas.

$$(i) Y_{WSFTP} = 0.35(Y_{FTP}) + 0.37(Y_{SC03}) + 0.28(Y_{US06})$$

Where:

(A) Y_{WSFTP} = Mass emissions per mile for a particular pollutant weighted in terms of the contributions from the FTP, SC03, and US06 schedules. Values of Y_{WSFTP} are obtained for each of the exhaust emissions of NMHC, NO_x, and CO.

(B) Y_{FTP} = Weighted mass emissions per mile (Y_{wm}) based on the measured driving distance of the FTP test schedule.

(C) Y_{SC03} = Calculated mass emissions per mile based on the measured driving distance of the SC03 test schedule.

(D) Y_{US06} = Calculated mass emissions per mile based on the measured driving distance of the US06 test schedule.

$$(ii) \text{ Composite (NMHC+NO}_x\text{)} = Y_{WSFTP}(\text{NMHC}) + Y_{WSFTP}(\text{NO}_x)$$

Where:

(A) Y_{WSFTP}(NMHC)=results of paragraph (c)(1)(i) of this section for NMHC.

(B) Y_{WSFTP}(NO_x)=results of paragraph (c)(1)(i) of this section for NO_x.

(2) When the test vehicle is not equipped with air conditioning, the relationship of paragraph (c)(1)(i) of this section is:

$$(i) Y_{WSFTP} = 0.72(Y_{FTP}) + 0.28(Y_{US06})$$

Where:

(A) Y_{WSFTP} = Mass emissions per mile for a particular pollutant weighted in terms of the contributions from the FTP and US06 schedules. Values of Y_{WSFTP} are obtained for each of the exhaust emissions of NMHC, NO_x, and CO.

(B) Y_{FTP} = Weighted mass emissions per mile (Y_{wm}) based on the measured driving distance of the FTP test schedule.

(C) Y_{US06} = Calculated mass emissions per mile based on the measured driving distance of the US06 test schedule.

$$(ii) \text{ Composite (NMHC+NO}_x\text{)} = Y_{WSFTP}(\text{NMHC}) + Y_{WSFTP}(\text{NO}_x)$$

Where:

(A) Y_{WSFTP}(NMHC)=results of paragraph (c)(2)(i) of this section for NMHC.

(B) Y_{WSFTP}(NO_x)=results of paragraph (c)(2)(i) of this section for NO_x.

(d) The NO_x humidity correction factor for adjusting NO_x test results to the environmental test cell air conditioning ambient condition of 100 grains of water/pound of dry air is:

$$K_H (100) = 0.8825 / [1 - 0.0047(H - 75)]$$

Where:

H=measured test humidity in grains of water/pound of dry air.

[61 FR 54900, Oct. 22, 1996, as amended at 70 FR 40434, July 13, 2005]

§ 86.164-08 Supplemental Federal Test Procedure calculations.

(a) The provisions of § 86.144-94 (b) and (c) are applicable to this section except that the NO_x humidity correction factor of § 86.144-94(c)(7)(iv) must be modified when adjusting SC03 environmental test cell NO_x results to 100 grains of water according to paragraph